

Claims

1. A substantially pure human seven-pass trans-membrane receptor protein having the amino acid sequence of SEQ ID NO:2.

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2. A substantially pure peptide which is a fragmentary, contiguous sequence of at least 5 amino acids in the amino acid sequence of SEQ ID NO:2.

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3. An isolated DNA encoding the seven-pass trans-membrane receptor protein of claim 1.

4. The isolated DNA according to claim 3, having the nucleotide sequence of SEQ ID NO:1.

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5. An isolated DNA or a derivative thereof, wherein said isolated DNA is a fragmentary, contiguous sequence of at least 12 nucleotides in the nucleotide sequence of SEQ ID NO:3.

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6. An isolated DNA or a derivative thereof, wherein said isolated DNA is a fragmentary, contiguous sequence of at least 12 nucleotides in the nucleotide sequence of SEQ ID NO:4.

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7. An isolated RNA or a derivative thereof, wherein said isolated RNA is a fragmentary, contiguous sequence of at least 12 nucleotides in an RNA which is complementary to the nucleotide sequence of SEQ ID NO:3.

8. A replicable recombinant DNA, comprising a replicable expression vector and, operably inserted therein, the isolated DNA according to any one of claims 3 to 6.

9. A cell of a microorganism or cell culture, transformed with the replicable recombinant DNA of claim 8.

10. A seven-pass transmembrane receptor protein obtainable by a process which comprises:

(a) ligating, to a replicable expression vector, the isolated DNA according to claim 3 or 4, to thereby obtain a replicable recombinant DNA having said replicable expression vector and, operably inserted therein, said DNA;

(b) transforming cells of a microorganism or cell culture with said replicable recombinant DNA to form transformants;

(c) selecting said transformants from parent cells of the microorganism or cell culture; and

(d) culturing said transformants, causing said transformants to express said DNA and produce a protein on the cell surface of said transformants.

5 11. A method for screening a ligand which binds to the seven-pass transmembrane receptor protein of claim 1, which comprises:

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10 contacting the protein of claim 1 or 10, or the peptide of claim 2, with a sample which is suspected to contain a ligand which binds to said protein or said peptide;

assessing a change occurring in response to a binding of said ligand to said protein or said peptide; and

15 detecting said ligand by using said change as an index.

20 12. A method for screening a substance which inhibits a ligand from binding to the seven-pass transmembrane receptor protein of claim 1, which comprises:

25 contacting the protein of claim 1 or 10, or the peptide of claim 2, with a ligand which binds to said protein or said peptide and a sample which is suspected to contain a substance which inhibits said ligand from binding to said protein or said peptide;

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assessing a change occurring in response to a
binding of said ligand to said protein or said peptide;
and
detecting said substance by using said change as
an index.

13. An antibody which specifically binds to the seven-pass transmembrane receptor protein of claim 1.

10 14. A method for the diagnosis of an inflammatory disease, which comprises determining the amount of a seven-pass transmembrane receptor protein expressed in human leukocytes, wherein said seven-pass transmembrane receptor protein is the protein having the amino acid
15 sequence of SEQ ID NO:2.

15 15. The method according to claim 14, wherein said inflammatory disease is rheumatoid arthritis.

20 16. The method according to claim 14 or 15, wherein said human leukocytes are human granulocytes.

17. The method according to claim 16, wherein said human granulocytes are sampled from human tissue.

18. The method according to claim 17, wherein said human granulocytes are granulocytes which have been sampled at least six hours before diagnosis.

5 19. The method according to claim 14, wherein said amount of the expressed protein is determined by measuring the amount of mRNA encoding said protein.

10 20. The method according to claim 19, wherein said amount of the mRNA is measured by RT-PCR method.

15 21. The method according to claim 14, wherein said amount of the expressed protein is determined by measuring the amount of said protein present on the cell surface of the leukocytes.

22. The method according to claim 21, wherein said amount of the protein is measured using an antibody which specifically binds to said protein.

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